

Serial No. 09/978,469

Patent  
Attorney Docket No.: PD-201079

**AMENDMENT TO THE DRAWINGS**

In response to the drawing objection, please find the attached Replacement Sheets for  
FIGs. 1-5 to replace "Figure" with "FIG."

MAR 20 2007

Serial No. 09/978,469

Patent  
Attorney Docket No.: PD-201079**REMARKS**

By this amendment, claims 1, 3-16 and 18-33 are pending, in which claim 33 is withdrawn.

The Office Action mailed December 20, 2006 rejected claims 1, 16, 31, and 32 under 35 U.S.C. § 102 as anticipated by *Chang et al.* (MEDIC: A Memory and Disk Cache for Multimedia Client), claims 3-7, 10, 18-22, and 25 as obvious under 35 U.S.C. § 103 based on *Chang et al.* in view of *Baldwin* (US 7,050,061), and claims 8-9, 11-15, 23-24, and claims 26-30 based on *Chang et al.* in view of *Lemmons et al.* (US 2001/0013126 A1).

Applicants respectively traverse the anticipation rejection, as *Chang et al.* fails to teach all the features of claims 1, 16, 31 and 32. For example, independent claim 1 recites "a memory management unit (MMU) **coupled between** said application and said physical memory and said bulk storage device," and "said MMU is configured to translate a virtual address provided by said application to a physical address used by one of said physical memory and said bulk storage device."

The Examiner, on pages 4-5 of the Office Action, states that *Chang et al.* discloses the feature of a "memory management unit coupled between an application and physical memory and bulk storage device" and "MMU configured to translate a virtual address provided by an application to a physical address" within page 493, left column, abstract, 3<sup>rd</sup> paragraph, page 494; right column, FIG. 1 and 1st paragraph, page 495, left column, FIG. 2 and 5<sup>th</sup> paragraph. Applicants respectfully disagree.

Firstly, *Chang et al.* does not disclose a memory management unit **coupled between** an application and physical memory and bulk storage device. On page 4 of the Office Action, the Examiner has explicitly equated the physical memory of the Applicants to the cache memory of *Chang et al.* and the bulk storage device of the Applicants to the integrated memory of *Chang et al.* Furthermore, as best understood from the cited passages and figures, the

Serial No. 09/978,469

Patent  
Attorney Docket No.: PD-201079

Examiner equates the claimed memory management unit to the integrated memory-disk cache of *Chang et al.* There is clearly no disclosure of such a memory management unit **coupled between** an application, physical memory and bulk storage device as it is evident from FIG. 1 that *Chang et al.*'s integrated memory-disk cache (which is what manages the data) actually encompasses the physical memory (cache memory) and the bulk storage device (integrated memory) and is not **coupled between** the cache memory and integrated memory.

Furthermore, *Chang et al.*, in the Abstract, states that they propose "an integrated memory and disk cache for managing the resources of the multimedia client's computer or set-top box" and within page 494, right column they present "the algorithm MEDIC, an adaptive, integrated memory-disk buffer manager".

In addition, the Examiner has not specifically equated the claimed application to any feature of the *Chang et al.* system. FIG.1 illustrates that the data is sent over from the network, is stored in the memory-disk cache **whose contents are managed by the MEDIC algorithm** and is then used by the decoder, which presents this data to the user. The decoder therefore uses the data (claims 1, 16, 31 and 32 state that the application disclosed by the Applicants uses the stored data); however, the decoder of *Chang et al.* cannot be equated to the application of the Applicants as it does not provide a virtual address to the integrated memory-disk cache. The claimed application, on the other hand, does provide a virtual address that is translated by the MMU into a physical address, as disclosed within claims 1, 16, 31, and 32.

In view of the foregoing, Applicants respectfully request the withdrawal of the rejections of claims 1, 16, 31 and 32 under § 102.

Regarding the obviousness rejection of claims 3-7, 10, 18-22, and 25, the addition of *Baldwin et al.* does not cure the deficiencies of *Chang et al.* *Baldwin et al.* is applied for a supposed teaching of "MMU configured to page pages using an algorithm, wherein said algorithm is based on a least-recently-used page basis, first in first out (FIFO) page basis, last

Serial No. 09/978,469

Patent  
Attorney Docket No.: PD-201079

in first out (LIFO) page basis and a best fit in physical memory basis" for the motivation of enabling an efficient translation from virtual address into physical address and an efficient cache architecture and memory organization. The combination of *Chang et al.* and *Baldwin et al.* fails to disclose all the features of the claims, and thus, a *prima facie* case of obviousness has not been established.

Additionally, the proposed combination of *Chang et al.* and *Baldwin* is improper, as there is no motivation to modify the *Chang et al.* design. Specifically, there is no motivation for configuring the integrated memory and disk cache of *Chang et al.* (which the Examiner has equated to the MMU to manage the resources of the client's set top box) "to page pages using an algorithm that involves a least-recently-used basis, FIFO basis, LIFO basis, or best fit basis for the purpose of achieving an efficient memory translation from a virtual address into a physical address and an efficient cache architecture and memory organization". The integrated memory and disk cache of *Chang et al.* is the unit that pages pages of data arriving from the network based on the MEDIC algorithm. The pages of data are paged by the MEDIC algorithm according to a basis set by the decoder. Page 495, right column discloses various conditions that dictate the MEDIC's actions of organizing data. Some of these include the read threshold, the initiation of a read IO, the initiation of a write IO and playback. There is therefore no motivation for the MEDIC to organize memory (i.e. page pages of data) based on an approach such as LIFO/FIFO etc. as the organization of memory, as stated before is based on the needs of the decoder. Furthermore, *Chang et al.* specifically states, on pg. 496 left column, lines 2-3 that "MEDIC is an event-driven algorithm, where there are three types of events: a packet arrives, the decoder consumes a page, and an IO completes". Hence, there is no motivation for paging of pages of data by the MEDIC.

Regarding the obviousness rejection of claims 8-9, 11-15, 23-24, and 26-30, the addition of *Lemmons et al.* likewise fails to fill in the gaps of *Chang et al.* *Lemmons et al.* is applied for a supposed teaching of "a system, wherein said data comprises program guide data

Serial No. 09/978,469

Patent  
Attorney Docket No.: PD-201079

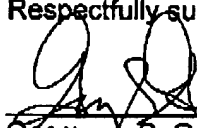
for said application comprising a program guide for a plurality of program sources" in paragraph 40. Furthermore, the Examiner has indicated that the motivation for doing so would have been "allowing user to locate programs of interest by applying a restrictive search selection criteria and a nonrestrictive sort attribute to program schedule information". The Applicants disagree as there would be no motivation for storing program guide data together with the imaging data within the integrated memory and disk cache. The reason for having such an integrated memory disk-cache in the first place is because a cushion is needed against variability in the data delivery rate and against delivery and consumption rates (*Chang et al.*, pg 493 right column, lines 4-7). These variations cause problems for the viewer if they are not handled correctly because the data that is delivered by the server are images which, when displayed out of order or at non-uniform rates, leads to poor viewing quality. One of ordinary skill in the art would not be motivated to store program guide data in an expensive integrated memory disk cache at the client side because the requirements for the presentation of program guide data to the user are not as stringent as the requirements for displaying the actual program itself. The combination of *Chang et al.* and *Lemmons et al.* fails to disclose all the features of the claims, and thus, a *prima facie* case of obviousness has not been established.

Therefore, the present application, as amended, overcomes the objections and rejections of record and is in condition for allowance. Favorable consideration of this application is respectfully requested. If any unresolved issues remain, it is respectfully requested that the Examiner telephone the undersigned attorney at (310) 964-4615 so that such issues may be resolved as expeditiously as possible. All correspondence should continue to be directed to our below-listed address.

Serial No. 09/978,469

Patent  
Attorney Docket No.: PD-201079

Respectfully submitted,

  
\_\_\_\_\_  
Georgann S. Grunebach  
Attorney for Applicant  
Registration No. 33,179

The DIRECTV Group, Inc.  
CA/LA1/A109  
2230 E. Imperial Highway  
P. O. Box 956  
El Segundo CA 90245

Telephone No. (310) 964-4615